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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/733,094

12/11/2003

David Meltzer

NP007

9145

20178

7590

11/16/2005

EPSON RESEARCH AND DEVELOPMENT INC
INTELLECTUAL PROPERTY DEPT
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EXAMINER

SHINGLETON, MICHAEL B

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,094

Applicant(s)

MELTZER, DAVID

Examiner

Michael B. Shingleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-82 is/are pending in the application.
- 4a) Of the above claim(s) 6, 36-43, 46 and 71 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-35, 44, 45, 47-70, and 72-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Applicant's election of Species II in the reply filed on 09/19/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, 8 and 28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Toncich US2002/01494324 (Tonicich).

Figures 1 and 4 of Toncich disclose a variable frequency oscillator 200 having a temperature compensation node (Note the node between elements C2 and FE2.), a frequency control node (Note the node between elements C1 and FE1.) and a resonant circuit composed in part by the crystal oscillator and the capacitors C1, C2 and elements FE1, FE2. The resonant circuit is composed of a first tunable sub-circuit composed of elements C2 and FE2 that is responsive to the temperature control signal and is independent a second sub-circuit composed of elements C1 and FE1 that is responsive to a frequency control signal. Because the tunable sub-circuits are independent and are connected in parallel with one another the invention of Toncich is fully capable of providing the function of continually responding to both the frequency control and the temperature control signals at the same time. The FE1 and FE2 are clearly variable impedance elements. Note that Figure 1 shows an electronic device including the variable frequency oscillator 200.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 12, 58-61, 66, 69, 70 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art as present on page 7 of the specification in view of Toncich US2002/01494324 (Tonicich).

AAPA discloses that the typical oscillator includes an amplifying stage and a phase shift network in a feedback loop around a resonant circuit. The difference between the AAPA and the indicated claimed invention as set forth in at least some of the indicated claims above resides in the particular resonant circuit.

Tonicich discloses that a resonant circuit for a oscillator can include two tunable sub-circuits C1, C2, FE1, FE2 with one being responsive to temperature and one being responsive to a frequency control input. This allows for frequency compensation to be done at the same time as varying the frequency. Tonicich also discloses a variable frequency oscillator 200 having a temperature compensation node (Note the node between elements C2 and FE2.), a frequency control node (Note the node between elements C1 and FE1.) and a resonant circuit composed in part by the crystal oscillator and the capacitors C1, C2 and elements FE1, FE2. The resonant circuit is composed of a first tunable sub-circuit composed of elements C2 and FE2 that is responsive to the temperature control signal and is independent a second sub-circuit composed of elements C1 and FE1 that is responsive to a frequency control signal. Because the tunable sub-circuits are independent and are connected in parallel with one another the invention of Tonicich is fully capable of providing the function of continually responding to both the frequency control and the temperature control signals at the same time. The FE1 and FE2 are clearly variable impedance elements. Note that Figure 1 shows an electronic device including the variable frequency oscillator 200.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the resonant circuit of AAPA with that of Tonicich so as to allow for frequency compensation to be done at the same time as varying the frequency as taught by Tonicich.

AAPA is also silent on including the temperature compensation circuit of claim 58 in an electronic device. Clearly the combination made obvious above is meant as a component of a larger system. In fact Tonicich shows the use of a variable oscillator employing the particular resonant circuit for use in a larger electronic system (See Figure 1).

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the system made obvious above in a larger electronic system such as a pll circuit so as to provide a more stable reference oscillator for the pll as taught by Tonicich.

Claims 9, 10, 13-17, 29-35, 44, 45, 62-65, 67, 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien 6,225,871 (Chien) in view of Tonicich US2002/01494324 (Tonicich).

Figure 2 and the relevant text of Chien disclose that the typical oscillator includes cross-coupled inverters P1, P2, N1, N2 and a resonant circuit 10 composed of cathode-connected varactors and an inductor as is clearly illustrated. The difference between Chien and the indicated claimed invention as set forth in at least some of the indicated claims above resides in the particular resonant circuit.

Toncich discloses that a resonant circuit for a oscillator can include two tunable sub-circuits C1, C2, FE1, FE2 with one being responsive to temperature and one being responsive to a frequency control input. This allows for frequency compensation to be done at the same time as varying the frequency. Toncich also discloses a variable frequency oscillator 200 having a temperature compensation node (Note the node between elements C2 and FE2.), a frequency control node (Note the node between elements C1 and FE1.) and a resonant circuit composed in part by the crystal oscillator and the capacitors C1, C2 and elements FE1, FE2. The resonant circuit is composed of a first tunable sub-circuit composed of elements C2 and FE2 that is responsive to the temperature control signal and is independent a second sub-circuit composed of elements C1 and FE1 that is responsive to a frequency control signal. Because the tunable sub-circuits are independent and are connected in parallel with one another the invention of Toncich is fully capable of providing the function of continually responding to both the frequency control and the temperature control signals at the same time. The FE1 and FE2 are clearly variable impedance elements. Note that Figure 1 shows an electronic device including the variable frequency oscillator 200.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added an additional varactor sub-circuit to Chien so as to allow for frequency compensation to be done at the same time as varying the frequency as taught by Toncich.

With respect to claims 15 and 32, here the resonant circuit is to include a crystal resonator in place of the inductive component of the tank circuit.

One of ordinary skill would have been motivated to make the substitution of an crystal resonator for an inductor in resonant circuit since the examiner takes Official Notice of the equivalence of the inductor and crystal resonator for there use in tank circuits and the selection of any of these known equivalents for providing inductive component in a tank circuit would be within the level of ordinary skill in the art.

Double Patenting

Claims 18-28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 7, 9, 11, 12-15, and 18 of copending Application No. 10/733,143 in view of Toncich US2002/01494324 (Tonicich).

The claims of the '143 application includes the specifics of the temperature compensation circuit which is also claimed in the claims of the instant '094 application (Note claim 18 for example in the '094

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application). The claims of the '143 application are silent on the details of a variable frequency oscillator that includes the specific temperature compensation circuit as is set forth in claims of the '094 and '143 applications. Toncich teaches a variable frequency oscillator having at least two tunable sub-circuits for tuning frequency and temperature. Toncich is silent on the details of the temperature compensation circuit as shown by the box diagram 204 and thus the temperature compensation circuit could be composed of a variety of different structures. Thus it would have been obvious to one of ordinary skill in the art to have employed the claimed temperature compensation circuit in a circuit like that of Toncich because as the Toncich reference is silent on the details of the temperature compensation circuit one of ordinary skill in the art would have been motivated to utilize any temperature compensation circuit in place thereof. In other words claims like 18 of the '094 application is relying on the details of the temperature compensation circuit as claimed in the '143 application for patentability and thus these claims are not considered patentably distinct (See MPEP 806.05(c)II).

This is a provisional obviousness-type double patenting rejection.

Claims 47-57 and 72-81 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 7, 9, 11, 12-15, and 18 of copending Application No. 10/733,143 in view of Chien 6,225,871 (Chien) and Toncich US2002/0149432A (Tonicich).

The claims of the '143 application includes the specifics of the temperature compensation circuit which is also claimed in the claims of the instant '094 application (Note claim 18 for example in the '094 application). The claims of the '143 application are silent on the details of a variable frequency oscillator that includes the specific temperature compensation circuit as is set forth in claims of the '094 and '143 applications. The claims of the '143 application are silent on the use of a cross-coupled inverter. Figure 2 and the relevant text of Chien disclose that the typical oscillator includes cross-coupled inverters P1, P2, N1, N2 and a resonant circuit 10 composed of cathode-connected varactors and an inductor as is clearly illustrated.

Tonicich discloses that a resonant circuit for a oscillator can include two tunable sub-circuits C1, C2, FE1, FE2 with one being responsive to temperature and one being responsive to a frequency control input. This allows for frequency compensation to be done at the same time as varying the frequency. Toncich also discloses a variable frequency oscillator 200 having a temperature compensation node (Note the node between elements C2 and FE2.), a frequency control node (Note the node between elements C1 and FE1.) and a resonant circuit composed in part by the crystal oscillator and the capacitors C1, C2 and elements FE1, FE2. The resonant circuit is composed of a first tunable sub-circuit composed of elements

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C2 and FE2 that is responsive to the temperature control signal and is independent a second sub-circuit composed of elements C1 and FE1 that is responsive to a frequency control signal. Because the tunable sub-circuits are independent and are connected in parallel with one another the invention of Toncich is fully capable of providing the function of continually responding to both the frequency control and the temperature control signals at the same time. The FE1 and FE2 are clearly variable impedance elements. Note that Figure 1 shows an electronic device including the variable frequency oscillator 200.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added an additional varactor sub-circuit to Chien so as to allow for frequency compensation to be done at the same time as varying the frequency as taught by Toncich.

Toncich also teaches a variable frequency oscillator having at least two tunable sub-circuits for tuning frequency and temperature. Toncich is silent on the details of the temperature compensation circuit as shown by the box diagram 204 and thus the temperature compensation circuit could be composed of a variety of different structures. Thus it would have been obvious to one of ordinary skill in the art to have employed the claimed temperature compensation circuit in a circuit made obvious above because as the Chien and Toncich reference are silent on the details of the temperature compensation circuit one of ordinary skill in the art would have been motivated to utilize any temperature compensation circuit in place thereof. In other words claims like 47 of the '094 application is relying on the details of the temperature compensation circuit as claimed in the '143 application for patentability and thus these claims are not considered patentably distinct (See MPEP 806.05(c)II).

This is a provisional obviousness-type double patenting rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571)272-1770.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS
November 8, 2005

Michael B. Shingleton
MICHAEL B. SHINGLETON
PRIMARY EXAMINER
GROUP 1 PART I UNIT 2817